

Appendix A.26

County Social Area Analysis Lesson - Hope High School – GIS Version

Urban Geography Lesson - County Census and School Data

1. Open ArcView. Click on New View. Add theme: "Tracts.shp"
2. This is County Census Tract information. Notice the different sizes of the tracts. Tracts are designed to contain approximately 4,000 people.
 - A. Why would our federal government count people in smaller areas and larger areas? Why aren't all the tracts the same size?
 - B. What does the physical geography of an area have to do with the shape and the area of a tract?
3. Click on the identify button on the toolbar (the "I" in the black circle). Fill in the chart using the data that comes up when you click the identify button in a tract area. Don't use the same tract more than once and click on all sizes of tracts.

Area of the Tract (up to 2 decimals)	1990 Population	1997 Population	Percent Population Change 1990-1997	1990 Population per square mile

What are two observations you can make about the data in this chart?

A. _____

B. _____

4. Let's put this data into our County map and look at the tracts' data geographically. Double click on the color box under Tracts.shp on the view screen. The Legend Editor will appear. For Legend Type, go to graduated color and then choose a variable used above from the classification field- area, population 1990, population 1997, or population per square mile. Remember you can classify the data in any number of subsets or as specifically as you wish. Pick your color too. Choose apply. Now look at your map.
 - A. Which way do you prefer to look at the data-on the map or in the chart above? Why? ____

- B. Make a similar map for two other variables above on your chart and come to three conclusions about population, population growth and population density in your county.
1. _____
 2. _____
 3. _____

5. How does the physical geography of the County impact population density and growth?
6. Let's add more specific data. Pull up a new view with Blockgrp.shp file. What do you notice about the overall "Blockgrp.shp" map compared to the "Tract.shp" map.
7. Put your Blockgrp.shp map into graduated color and pick one of the same variables from the classification field. Apply it. How is this map similar or different from the data above on the same variable?
8. Block groups are extremely specific pieces of data while tracts are combined block groups. Which careers might require you to analyze data on one level versus the other?

Tract data:

Block group data:

9. We need to add some streets to this county to better understand where things are. Go to add theme and click on streets3.shp. Add it to the map. What do you notice about streets throughout the county?
10. Let's zoom in and find the street where you live, and your high school. Turn off all other themes except streets to move more quickly. As you zoom in, go slowly and let the computer catch up with you. Don't keep hitting zoom in; give the program time to do what you have asked it before you punch it again. Click on identify to locate your street. Label your street. Add a point marker to identify the location of the high school. Click on the label button to name the street and put in a marker to identify the location of HHS. Print a map of these two places.
11. How may physical geography clues have helped you find your street? Would it have been easier if the map were topographic or if there were water bodies (rivers, reservoirs) labeled?
12. Click on "Blockgrp.shp" to reactivate the block groups. Which variable do you have mapped?

What can you tell about your street? Or block? And the high school's neighborhood?

13. Zoom out until you have some variations in the color of your neighborhood and another part of the County. Go to View on the top toolbar and click on Properties. Change map units to decimal degrees and change distance units to miles. Select OK. (If your view does not come back on, click "zoom to the extent of all themes" and your map will appear.) Find the ruler from the toolbar and let's measure some things. Distance will be logged on bottom left hand side of screen.
- A. How far is it from your house to school? _____
 - B. How far is it from your school to a severe change in color of your variable? Which variable is it? _____
 - C. How far is your school from the Denver County border? _____
 - D. At the farthest points, how many miles long and wide is the County? _____

You have to love using the measure tool as it is a bit like dealing with chewed gum!!!

14. We need to add a few urban geography features. Add these location points on the population per square mile map. Let's add a point marker for the County Airport at 120th and Wadsworth. Also mark a couple of shopping malls and a couple medical facilities throughout the county. You can use my phone book if you need some addresses.
- A. What is interesting about the location of the airport? _____
 - B. What is interesting about the location of malls and hospitals? _____
 - C. Are there other places in our county that you would place an airport? Why or why not? _____
 - D. How many airports does the County need? _____
How many shopping malls and hospitals does it need? _____
Why do we need more of one service than of another service? _____
 - E. Without knowing the history of Broomfield and Westminster, what is your hypothesis of how the development of the airport and suburbs came to be? Think about the activity we did with land value and economic control.

15. Add Hwys.shp file to your map. Notice the high population density areas. Is there a geographic relationship between transportation routes and population density? Why or why not? _____

16. Identify the main highways. Think about range and transportation as key concepts in the location of various features. What are two things you notice about main thoroughfares, location of higher and lower order functions, and range of these features?

1.

2.

17. Finally, let's look at the County High School attendance areas. Add theme "Highsch.shp" Look at the attendance areas by population density. When you identify the area and you click on the area, results appear. Scroll down until you find the high school name. Which 5 schools have the highest population density attendance areas?

18. Put your "streets3.shp" onto the map. What relationship or pattern do you notice about urban sprawl? Remember our activity about transportation, land value and now population densities.

19. Go to the legend editor of the "Highsch.shp" Choose 3 variables which are economic factors. Choose 2 variables which are educational factors (like test scores or graduation rates). Pick variables you have not used yet. Make several views out of these variables to compare. Is there a relationship between economic and educational factors? What might that relationship be? Print the maps which most support what you tell me about economic and educational factors. Write a paragraph explaining the relationships and attach the maps.

20. Having observed patterns about our county, let's look at these issues on the international arena and see what patterns might exist. Open theme view "country94.shp" Click on tables and get the table titled "w_newswk.dbf" Join this table to the "cntry94 attributes" table. Pick some economic variables and some educational variables and compare if your observations above are globally true also. Write up a paragraph summary below and print any maps I would need to understand your argument.